

ASAHI
PENTAX
K series

AUTO EXTENSION TUBE SET
EXTENSION TUBE SET

K



Auto Extension Tube Set K



No. 1



No. 2



No. 3

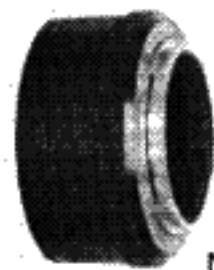
Extension Tube Set K



No. 1



No. 2



No. 3

Function and Features

The Auto Extension Tube Set K consists of No. 1 (length: 12mm), No. 2 (19mm) and No. 3 (26mm) rings. The Extension Tube Set K consists of No. 1 (9.5mm), No. 2 (19mm) and No. 3 (28.5mm) rings. As the rings in the two sets are of different lengths, you should distinguish carefully between the Auto Extension Tube rings and the Extension Tube rings when checking the close-up reference tables starting on p. 17.

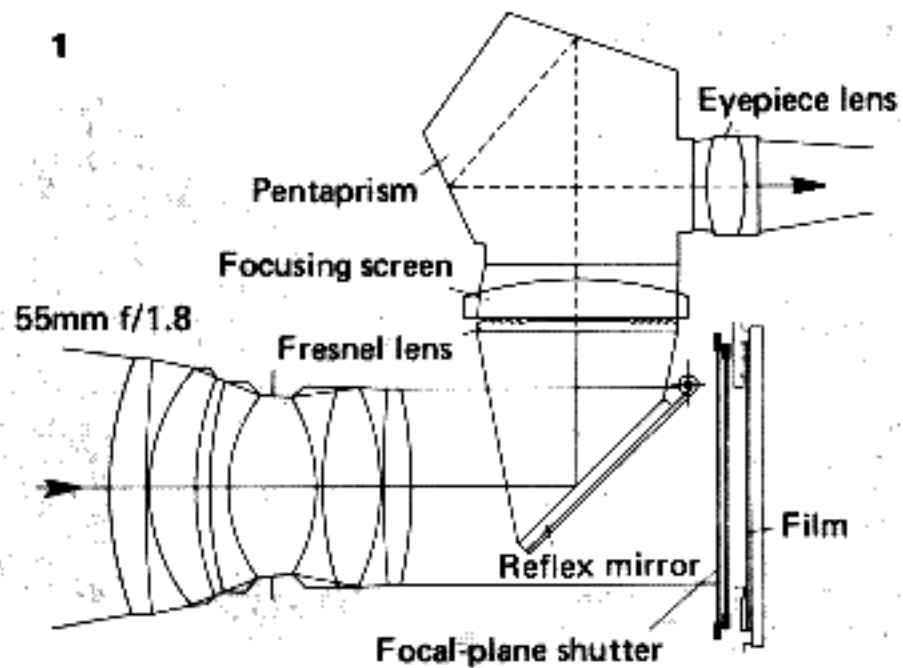
The Auto Extension Tube Set K couples to the automatic diaphragm and the full-aperture metering mechanism of the lens. Since almost all SMC Pentax interchangeable lenses do have automatic diaphragms and full-aperture metering mechanisms the Auto Extension Tube Set makes close-up work much more convenient.

The Extension Tube Set K is a simple connecting tube between the lens and the camera and may be more suitable for lenses without an automatic diaphragm or a full-aperture metering mechanism.

As shown in Fig. 1, the single-lens reflex camera permits you to see in the finder the picture as it will appear on the film. The mounting of connecting tubes such as extension tubes leaves unimpaired this basic advantage — the picture to be taken is still shown accurately in the finder. Thus the SLR is particularly good for close-up work.

The greater the lens-to-film-plane distance, the closer the picture-taking distance can be. For further details, see the tables on pp. 17-39.

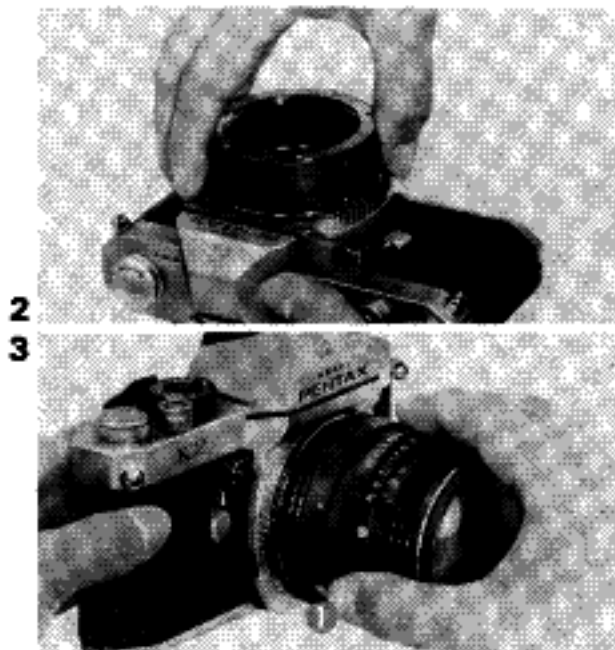
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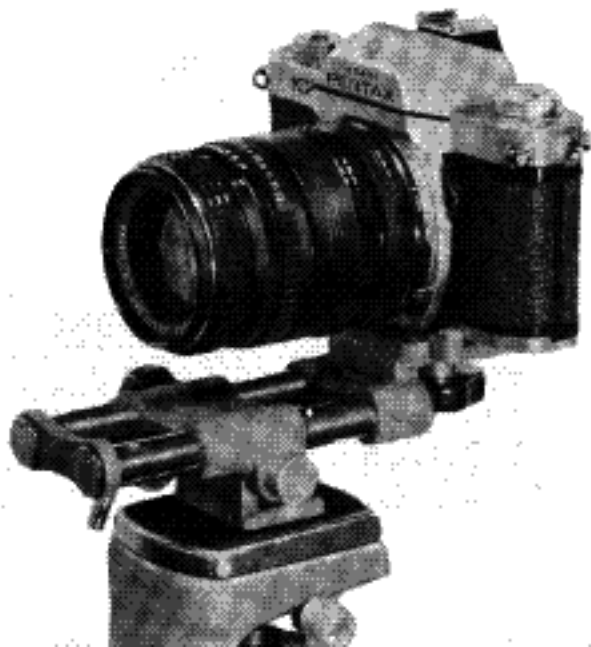
How to Mount Rings and Lens

Detach the lens from the camera body as shown in Illustration 2. Select one of the extension rings, according to the close-up reference tables; mount the ring on the camera just as you would a lens. The same procedure is followed if you want to use two or three rings. In this case, the order of the rings in the combination is entirely a matter of choice.

Attach the lens on the ring as shown in Illustration 3. If you want to detach the lens or one of the rings, push the lock-release button (1) on the ring and turn the lens or the ring counterclockwise 65°. Take care not to mistake the lock-release button for the lens lock-release lever on the camera. The lock device on the ring prevents accidental detaching of the lens or ring.



4



How to Focus and Meter

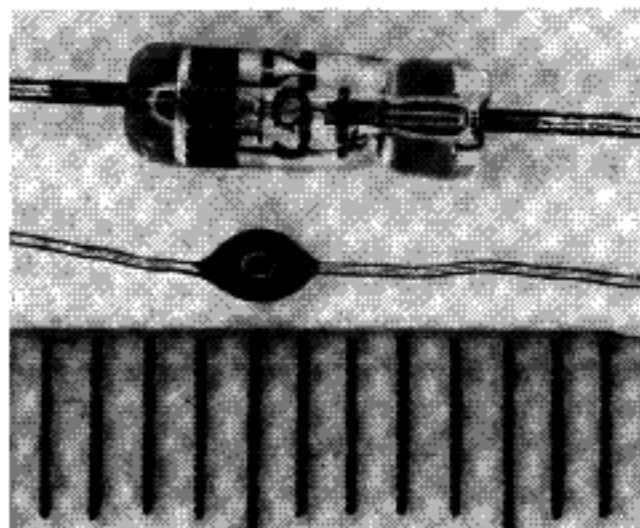
When used with any of the rings of the Auto Extension Tube Set K, a lens with full-aperture metering capability stays open at full aperture. When using the Extension Tube Set K, the aperture of the lens must be set manually.

The Auto Extension Tube Set K permits full-aperture focusing and metering with the Pentax K2, KX and KM cameras, just as if the lens were mounted directly on the camera.

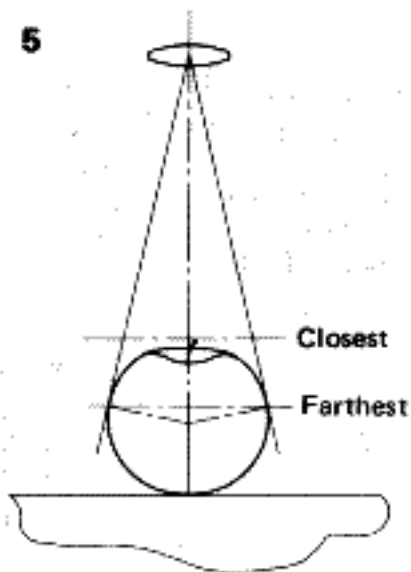
When using the Extension Tube Set K, open the aperture completely for focusing and then stop down the aperture to the desired value for shooting. When using this extension tube set with the Pentax K2, KX or KM, use a stop-down metering system (p.7).

When the magnification in picture-taking increases (to more than $1/2x$ for example), you may be unable to focus accurately merely by turning the focusing ring of the lens. In hand-held shooting, you can move the camera away from or close to the subject to get the correct focus. If your camera is on a tripod, you can use the Critical Focuser III accessory and slide the camera backwards or forwards for easy focusing, as shown in Illustration 4.

When using any extension rings you must keep in mind that the distance and depth-of-field scales on the lens cannot be used.



Electronic Parts: Photographed at about $2x$.

5

Depth-of-field in Close-ups

The shorter the lens-to-subject distance is, the shallower the depth-of-field becomes. You may not be able to secure adequate depth-of-field even at the standard lens' minimum aperture of $f/22$. In any event, the closer you go the more difficult exact focusing becomes.

In close-up work, the depth-of-field has the same depth in its foreground and background. Focus should thus be set at the intermediate point, as shown in Fig. 5, between the closest and farthest points of the area you are covering in your focus.

Exposure When Using a Tripod

In close-up shooting, the aperture is most often stopped down to a small opening (larger aperture number); this lengthens the lens-to-film-plane distance. Exposure time naturally becomes longer. If the shutter speed is slower than 1/30 sec, using a sturdy tripod is recommended.

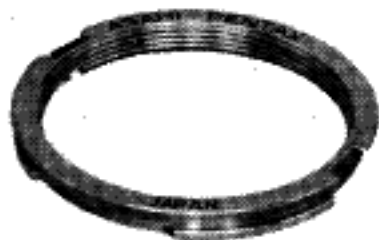
When you use both the Auto Extension Tube rings No. 1 and 2 with a 55mm standard lens, the total focal length is 7 ~ 8cm, equivalent almost to the focal length of an SMC Pentax 105 or 120mm lens. In such a case, if you are hand-holding the camera shooting at 1/60 sec or more, there is a considerable possibility of camera movement. Use of a tripod is thus recommended.

Aperture Reading in Finder of KX

In the Pentax KX camera, the aperture numbers of most SMC Pentax lenses are shown in the upper part of the viewfinder. When Auto Extension K rings or Extension K rings are mounted on the camera, the lens aperture numbers do not appear in the finder as the lens is moved farther out to the front.

HOW TO Use Takumar Lenses

6



Takumar screw-mount lenses can be attached to Auto Extension Tube Set K and Extension Tube Set K rings by using the Mount Adapter K, shown in Illustration 6.

As shown in Figure 7, screw the Takumar lens into the Mount Adapter K. Align the red dot on the adapter (2) with the red dot of the extension tube (3). Attach the adapter to the extension ring and turn the adapter clockwise 65° to lock it into place. (Take care not to strike the spring plate (4) with the claw of the extension ring mount.) This lock device has nothing to do with the lock-release button on the extension ring (5). The lens is released by giving it three counterclockwise turns. Removal of the lens leaves the Mount Adapter K attached to the extension ring mount.

To detach the Mount Adapter K, push the spring plate (4) with your fingernail or the point of something like a ballpoint pen and turn the adapter ring counterclockwise 65°, as shown in Illustration 8.

You can also use those SMC Takumar screw-in lenses which have an automatic dia-

phragm for stopped-down metering with the extension tubes. As shown in Illustration 9, set the aperture ring (6) at the desired value, turn the preview lever of the lens to "A" (Auto) for focusing, and then turn the lever to "M" (Manual) to stop down the aperture to the pre-set value.

7



8

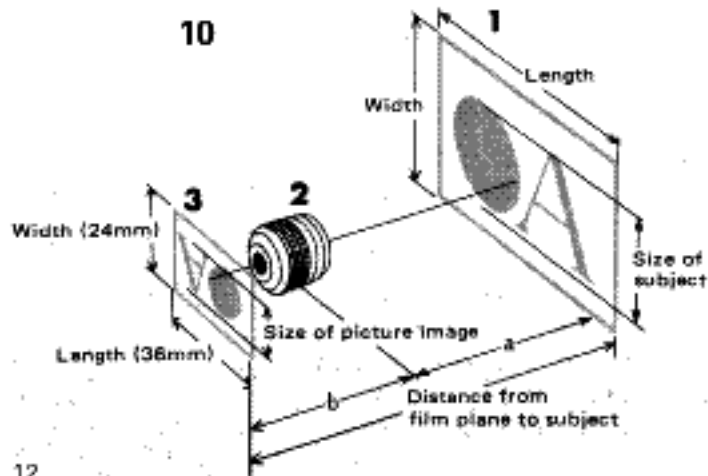


9



How to Use Close-up Reference Tables

1. Area to be photographed
2. Picture-taking lens
3. Picture area on film



Magnification

The magnification value equals;

$$\frac{\text{Size of Picture Image}}{\text{Size of Subject}} \quad \text{that is,}$$

Width or Length of Picture Area

Width or Length of Area to be Photographed

As the picture area of the Pentax K2, KX and KM cameras is 24 x 36mm, the magnification is;

$$\frac{24\text{mm}}{\text{Width of Area to be Photographed}} \quad \text{or}$$

Length of Area to be Photographed

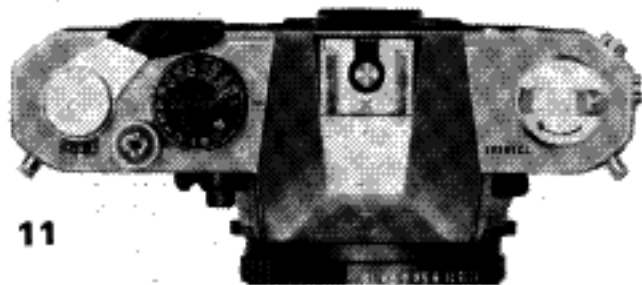
Care is required in enlarging as the enlarging multiplies the magnification ratio.

Area to be Photographed

The area to be photographed is the actual 2-dimensional measurement (width x length) of the subject when it is photographed so as to fill the entire picture area.

Distance from Film Plane to Subject

The Pentax K2, KX and KM cameras do not



11

indicate the exact position of the film plane, but the position is roughly at the rear edge of the camera top, as shown in Illustration 11. The distance from the film plane to the subject can be determined from the close-up reference tables in this booklet and the distance as measured with a steel tape from the film plane to the subject.

Exposure Factors

Pentax K series cameras have a built-in TTL exposure meter which measures the light actually passing through the lens and gives the correct exposure based on that measurement. For normal photographic purposes, you need not resort to the exposure factors given in the tables if you rely on the TTL meter. However, you must keep in mind that close-up work

requires longer exposures than would be required for shooting at normal distances.

How to Use Close-up Reference Tables

There are three ways to use the close-up reference tables: you can decide the magnification first, the area to be photographed first, or the film-plane-to-subject distance first. Make your choice of one of these three methods, then check the adjacent columns.

Magnification Set First

The magnification should be determined first if you want a certain sized subject to appear as a certain size on the film.

For example, if you want a subject measuring 10cm to appear as 3cm on the film, if you are shooting with a 55mm f/1.8 lens, the magnification is $3/10 = 0.3x$. According to

Table 6, you should use the No. 1 tube and set the distance anywhere on the scale between the closest distance and the infinity marks.

To get an accurate lens extension, use the simple mathematic formula given here. In Figure 18, "a" is the distance between the subject and the first nodal point in the lens—the point at which the light enters the lens to cross the principal axis. "b" is the distance from the second nodal point—the point at which the light crossing the principal axis leaves the lens—to the film plane. "f" is the actual focal length of the lens.

To determine "a", the formula is m (magnification) = $\frac{f}{a-f}$

To determine "b," the formula is $b = \frac{af}{a - f}$

Then, $b - f$ is the exact distance of the lens extension. Focusing is done by adjusting the distance between the lens and subject.

"f"—the actual focal length of the lens—will differ slightly from its nominal or stated focal length. Ask your local Pentax Service Center or dealer if you need more details.

Area to be Photographed Set First

After you have decided the size of the area to be photographed, next determine the size this will occupy on the film. For example, if you want to photograph an area measuring 10 x 15cm with a 55mm f/1.8 lens so that it completely fills the 24 x 36mm frame of the negative, Table 6 will tell you the No. 1 exten-

sion tube must be used and the distance scale set anywhere between the closest distance and infinity marks.

Distance of Film-Plane-to-Subject Set First

If you cannot bring the lens as close to the subject as you want, determine the film-to-subject distance first. For a given magnification, this film-to-subject distance differs from one focal-length lens to another. Choose a proper lens according to the close-up tables. For close-up and macro shots from a distance, use a longer focal-length lens.

Ultra-Close-ups: Larger than Life Size

No matter which lens you use, when the actual size of the subject equals the size of the picture image on the film, "a" equals "b". Thus, "a", the distance from the subject to the

first nodal point in the lens, is equal to "b", the distance from the second nodal point to the film plane. If you want ultra-close-ups larger than life size on the film attach the lens backwards on the extension ring by using the accessory, Reverse Adapter K 52mm. For details, check the close-up tables on pp. 35-39.

Lenses Best for Close-ups

In general, lens performance deteriorates and close-up focusing becomes more difficult under the following conditions: with faster lenses, with SLR wide-angle lenses having shorter focal lengths, and with telephoto lenses having shorter barrels. Particular care must be taken when shooting under these conditions.

Lenses not included in the close-up tables are not appropriate for close-up work with

extension rings. The 50mm f/1.4 lens is not suitable for close-ups of flat subjects such as documents, but it can be used for regular close-ups in which the area of the subject does not reach out to the edges of the picture format.

As the SMC Pentax Macro 50mm f/4 and 100mm f/4 lenses are especially designed for maximum performance at magnifications of 1/5-1/10x, the use of these lenses is recommended if you want critically-focused close-ups. These lenses can be used for distance shots and have a minimum of distortion. ("Distortion" is an aberration in which straight lines do not appear straight in the photograph.) They are thus most suitable for close-ups of documents.

How to Use Reverse Adapter K 52mm

Screw the Reverse Adapter K (Illustration 12) into the front of the SMC Pentax lens, turn the lens around and screw the reverse adapter into the Auto Extension Tube Set K or the Extension Tube Set K as shown in Illustration 13.

12



13

